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position that the continuous spectrum of the corona is mainly due to dispersed solar light. If the light is dispersed by particles which are large compared with the wave-length of light, the relative intensity of different parts of the spectrum will not be affected by the dispersion, and there is no chance of photographing the corona under ordinary daylight conditions except by isolating and photographing the monochromatic images which bear so small a proportion to the general light of the corona. There is some evidence, though I do not look upon it as conclusive for all photographic processes, that the position of the maximum of photographic activity in the coronal spectrum does not differ materially from the position of the maximum of photographic activity in the ordinary solar spectrum. The position of the continuous spectrum of the corona relatively to the position of the bright coronal and prominence lines which have been identified in the eclipse photographs shows that the distribution of photographic action in the coronal spectrum does not differ very materially from the distribution of the photographic action in the ordinary solar spectrum.

The Great Shower of Andromedes, 1885. By T. W. Backhouse.

The early part of the shower on November 27, 1885, was well seen at Sunderland. The following table gives the number of meteors actually counted by myself at different times during the display. Column (1) contains the times at which the meteors were counted; (2), the duration in seconds of each counting; (3), the estimated proportion of clear sky in the direction of observation; (4), the number of seconds in column (2) diminished for the extent of cloud; in (5) mention is made of hindrances to visibility of meteors in the portion of sky not clouded; then (6), the number of meteors counted in each interval; (7), the number per minute corrected for the amount of cloud; lastly, in (8), the approximate average direction of the point of sight is designated.

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Table I.

Time.						Duration of watch.	Sky.	Corrected duration of watch.	Hindrances.	Meteors.	Rate per minute.	Point of sight.
h	m	s		m	s	s		s				
4	25		to	35		420	1·0	420	Very bright twilight	2	0·3	
5	5		to	6		60	1·0	60	Bright twilight and gaslight	5	5	
5	7	50	to	9	5	75	1·0	75	Twilight	22	17·6	Near radiant
5	10	50	to	11	50	60	1·0	60		9	9	
5	12	50	to	14	32	102	1·0	102		25	14·7	ε Cygni
5	25	50	to	27	12	82	1·0	82	Slight twilight	26	19	Radiant point
5	40	40	to	41	27	47	0·95	44·6		21	28·3	
5	42	15	to	43	30	75	0·9	67·5		63	56	Average altitude 40°, in south
6	2	0	to	2	53	53	1·0	53		57	64·5	Zenith, facing south
6	10	40	to	11	30	50	1·0	50		54	64·8	α Andromedæ
6	12	15	to	14	45	150	1·0	150		160	64	Polaris
6	41	5	to	42	5	60	0·6	36		33	55	
7	4	12	to	5	0	48	0·5	24	Thin cloud	8	20	
7	5	25	to	7	3	78	0·7	68·6		30	26·1	

I also watched for four minutes—part of the time near the radiant point, and part below λ *Tauri*—with a $4\frac{1}{4}$-inch Refractor (power 20) between $6^h\ 49^m$ and 56^m, when the sky was nearly clear, but saw no meteors.

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Table II. compares this shower with those of 1866 and 1872.

TABLE II.

	Time of maximum observed. h m	Actual number seen per minute.	Amount of cloud.	No. per minute corrected for cloud.
1866, Nov. 13	13 9	61	0	61
1872 „ 27	6 21 to 27^m	14	0·5	28
1885 „ 27	6 11	65	0	65

This probably gives a pretty fair comparison, though from other accounts of the shower of 1872 I think I did not see its maximum, as it was mostly overcast here from $6^h\,40^m$ to $9^h\,0^m$; also as my eyes have been growing more sensitive, that might make a slight increase in the number of meteors seen in the late shower, compared with the previous ones.

About $6^h\,17^m$ I recorded the magnitudes of the meteors as well as their rapid appearance would permit. The number and percentage seen of each magnitude out of a total of 35 noted is shown in

TABLE III.

	= ♃	1st mag.	2nd	3rd	4th	5th	6th mag.
Number	1	4	3	7	12	8	0
Percentage	3	11	9	20	34	23	0

This was the only attempt I made to ascertain the magnitudes. I had the impression that the proportion of bright meteors was, in general, greater than at the time I observed the magnitudes. In any case it was very much greater than in 1872, certainly so previous to 7^h on that occasion. This time those as bright as *Jupiter* were very numerous, and many equalled *Venus*. Several were bright enough to cast a glow for some distance around; and one, I believe, illumined the whole sky—I did not see this one, but only its light.

All the bright meteors had bright trains, deep red in colour, but in some cases partly of other colours—chiefly whitish. The faint meteors had no perceptible trains as a rule; but those of about 3rd mag. had trains, yet too faint to show any colour. The 2nd mag. ones often showed the red. I saw but one persistent train; this was in the case of a meteor at $6^h\,4^m$, which equalled *Venus* at her brightest, a portion of the train being still faintly visible to the naked eye at $6^h\,10^m$, between γ and H *Camelopardi*. I noted its position very exactly for comparison with any other observation of it elsewhere; but though Mr. John Stevenson reports one such seen from near Edinburgh about 6^h, this, being near β *Aquilæ*, must have been another.

Between $6^h\,19^m$ and 28^m I took notice of the length of path and the duration of those far from the radiant point. As a rule, the brighter the meteor the longer the path and duration. The average of three 1st mag. ones gave a course of 13°, duration

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$1^{s}\cdot9$; of three 2nd mag. ones, 10° and $1^{s}\cdot5$. The fainter ones, say 3rd mag. and less, varied from $0^{s}\cdot4$ to $1^{s}\cdot1$ in duration; average probably $0^{s}\cdot7$.

I have not calculated the position of the radiant yet, but can confirm the observations of others that it was an area of several degrees in diameter. It is a striking circumstance that observers in widely distant places locate it differently, Mr. John Ballot, at Rolfontein in the Transvaal, putting it near ϵ *Trianguli* in the direction of 7. This point, as seen from the Transvaal, would be above (though not exactly above) the position of the average point of radiation derived from the observations in Europe; which fact (if the position is a correct one) suggests that the paths of the meteors may be deflected downwards by the Earth's attraction. On the other hand, Mr. H. J. Bell, observing in the Mauritius, places the radiant a few degrees north of γ *Andromedæ.* There is another reason which would partly account for the variously assigned position of the radiant point, but only partly—i.e. that a larger proportion of those meteors proceeding from the side of the radiant area nearest the zenith must be visible from any place than of those proceeding from the lower side of the area, owing to the correction required for obtaining the zenith horary number being less for the former. The motion of the radiant point observed by Denza and Schiaparelli would likewise be partly accounted for by the deflection of the paths.

I saw but two unconformable meteors, the former of them being the earliest I observed, viz. at $4^{h}\ 31^{m}$, when *Venus* was the only star visible at the time, so far as I noticed. It was far brighter than *Venus* at her brightest. I noted its position with respect to trees, &c., and afterwards ascertained that it appeared about R.A. $29\frac{1}{2}°$, D. $+22°$, and was directed towards about ϕ *Pegasi.* Its course was about 8° after I first saw it, and was very slow; duration probably 3^{s} or 4^{s}. It had a train of large and very bright sparks—I believe green.

The next meteor I saw occurred one or two minutes later, and was undoubtedly an *Andromede.* It was about equal to *Jupiter* in brilliancy, and appeared about R.A. 43°, D. $+18°$. Both this and the previous one I at first took to be fireworks, so observed them less carefully than I otherwise should have done; but the positions cannot be far wrong, especially of the first. The fact that they were meteors is proved by their having been seen from places many miles apart.

These, however, were not the earliest meteors seen here, for at $3^{h}\ 30^{m}$, or perhaps a little earlier, one was seen in the west. It must have been exceedingly brilliant to attract attention at all, the observer being very short-sighted. The same meteor, probably, was seen at Scarborough, where it appeared in the north-west. One was also seen from near Darlington about the same time, but, as far as I can gather from the description, was in the north-east, and must therefore have been another. These seem to have been *Andromedes.*

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The sky gradually clouded over here between 7^h and $7^h\ 15^m$, and continued overcast, or nearly so, the rest of the night, so far as I observed; but the following nights were clear, affording an opportunity of observing the gradual decline of the *Andromede* shower. The next table exhibits the duration of my watch on these nights, with the number of *Andromedes* as well as of all meteors I observed :—

TABLE IV.

Day.	Time.	Duration of watch.	Corrected duration of watch.	Hindrances.	Number of Andromedes seen.	Number of all Meteors seen.	Hourly rate of Andromedes.
1885.	h m h m	m	m				
Nov. 28	5 55 to 6 15	11	5	Thin cloud and gaslight	1	1	12
	8 5 to 11 23	79	78		17	22	13·1
	11 25 to 12 15	33	33	Moonlight, at first very slight	4	4	7·3
	Total	123	116		22	27	11·4
Nov. 29	5 41 to 11 30	52½	36	Aurora and thin cloud	5	6	8·3
	11 39 to 12 19	28½	23		3	7	7·8
	Total	81	59		8	13	8·1
Nov. 30	5 31 to 11 48	84	84		4	11	2·8
Dec. 1	5 50 to 11 43	61	61		0	3	0

After this the only decided *Andromede* I saw was a meteor on December 6; but one, which very likely belonged to the shower, appeared on the 4th.

Sunderland :
1886, *February* 8.

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Occultations of Stars by the Moon, and Phenomena of Jupiter's Satellites, observed at Stonyhurst Observatory. By Rev. S. J. Perry, F.R.S.

1885.	Phenomena.	Limb.	G.M.T. h m s	Remarks.
Mar. 22	Disapp. 111 *Tauri*	Dark	6 44 53·8	Sky very good.
	Reapp. ,,	Bright	7 50 34·4	,, ,, ,,
22	Disapp. 117 *Tauri*	Dark	8 51 26·8	,, ,, ,,
	Reapp. ,,	Bright	9 23 18·1	,, ,, ,,
27	Disapp. B.A.C. 3529	Dark	10 17 13·3	Passing clouds.
	Reapp. ,,	Bright	11 17 31·9	Sky pretty good.
27	Disapp. 43 *Leonis*	Dark	11 31 55·5	Sky good.
	Reapp. ,,	Bright	12 21 13·8	
Sept. 25	Disapp. μ *Piscium*	Bright	8 15 47·6	Good.
	Reapp. ,,	Dark	9 11 46·8	
Nov. 17	Disapp. B.A.C. 8365	Dark	10 40 28·5	Very good.
	Reapp. ,,	Bright	11 37 56·8	Haze: observation poor.

The observations are always given in G.M.T. and not in L.M.T., the longitude, $9^m\ 52^s{\cdot}68$ W., having been determined in 1850 by two complete trips from Liverpool to Stonyhurst and back with three excellent chronometers. The results are published in the eleventh volume of the *Monthly Notices* in a paper by the Rev. A. Weld. The above observations were all taken by the same observer, Mr. W. Carlisle, and a dark screen was always used.

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Phenomena of Jupiter's Satellites.

	Sat.	Phenomena.		G.M.T.			Corr. of *N.A.*		Observer.	Remarks.
				h	m	s	m	s		
1885, Feb. 2	4	Ec. Disap.	Fading	10	3	2			S. J. P.	Definition good.
			$\frac{1}{4}$ light		4	49			"	
			= 11th Mag. *		6	55·5			"	
			Last seen		9	7	+	39	"	If anything, a little too early.
3	1	Ec. Disap.	Fading	8	59	49			W. C.	Passing clouds at commencement of observation.
			$\frac{1}{2}$ light	9	0	54			"	
			Last seen		2	2	+	8	"	
19	1	Oc. Disap.	External contact	7	14	34			"	Definition very poor. Unsteady.
			Bisection		15	28			"	
			Last seen		16	41			"	
19	4	Ec. Reap.	First seen	8	44	57	+ 3	3	S. J. P.	Late, from nearness to limb. Definition good, but changing.
			$\frac{1}{4}$ light		50	52			"	
19	1	Oc. Reap.	First seen	9	33	5			W. C.	Definition good.
			Bisection		34	44			"	
			Last contact		36	53			"	
28	2	Oc. Disap.	External contact	8	45	25			"	Definition good, and planet very steady.
			Bisection		47	26			"	
			Last seen		49	7			"	
March 6	3	Tr. Egress	Internal contact	7	12	9			"	Unsteady.
			Bisection		14	33			"	
			Last contact		17	12			"	